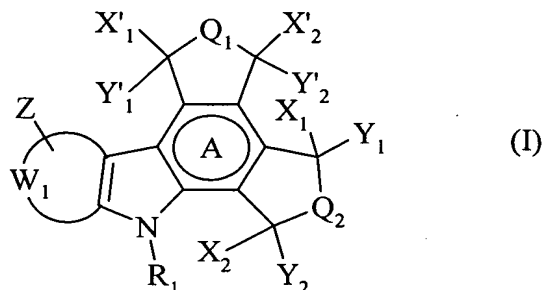




CLAIMS

Claims 1 – 20 (canceled)

21- (previously presented) A compound selected from those of formula (I) :



wherein :

- A represents a saturated or partially or fully unsaturated ring, wherein the unsaturation optionally confers an aromatic nature on the ring,
- W₁, together with the carbon atoms to which it is bonded, represents phenyl or pyridyl,
- Z represents one or more identical or different groups of formula U–V wherein :
 - ✓ U represents a single bond, linear or branched (C₁–C₆)alkylene, linear or branched (C₂–C₆)alkenyl optionally substituted by one or more identical or different groups selected from halogen and hydroxy, and/or optionally containing one or more unsaturated bonds,
 - ✓ V represents a group selected from hydrogen, halogen, cyano, nitro, azido, linear or branched (C₁–C₆)alkyl, aryl, aryl-(C₁–C₆)alkyl in which the alkyl moiety may be linear or branched, hydroxy, linear or branched (C₁–C₆)alkoxy, aryloxy, aryl-(C₁–C₆)alkoxy in which the alkoxy moiety may be linear or branched, formyl, carboxy, aminocarbonyl, NR₃R₄, –C(O)–T₁, –C(O)–NR₃–T₁, –NR₃–C(O)–T₁, –O–C(O)–T₁, –C(O)–O–T₁, –NR₃–T₂–NR₃R₄, –NR₃–T₂–OR₃, –NR₃–T₂–CO₂R₃, –O–T'₂–NR₃R₄, –O–T'₂–OR₃, –O–T'₂–CO₂R₃, and –S(O)_t–R₃,

wherein :

⇒ R₃ and R₄, which may be indentical or different, each represents a group selected

from hydrogen, linear or branched (C₁-C₆)alkyl, aryl, and aryl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched, or

R₃ and R₄, together with the nitrogen atom carrying them, form a saturated monocyclic or bicyclic heterocycle that has from 5 to 10 ring atoms, and which optionally contains in the ring system a second hetero atom selected from oxygen and nitrogen, and which is optionally substituted by a group selected from linear or branched (C₁-C₆)alkyl, aryl, aryl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched, hydroxy, linear or branched (C₁-C₆)alkoxy, amino, linear or branched mono-(C₁-C₆)alkylamino, and di(C₁-C₆)alkylamino in which the alkyl moieties may be linear or branched,

⇒ T₁ represents a group selected from linear or branched (C₁-C₆)alkyl which may be optionally substituted by a group selected from -OR₃, -NR₃R₄, -CO₂R₃, -C(O)R₃ and -C(O)NR₃R₄ wherein R₃ and R₄ are as defined hereinbefore; aryl, and aryl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched; or T₁ represents linear or branched (C₂-C₆)alkenyl optionally substituted by a group selected from -OR₃, -NR₃R₄, -CO₂R₃, -C(O)R₃ and -C(O)NR₃R₄ wherein R₃ and R₄ are as defined hereinbefore,

⇒ T₂ represents linear or branched (C₁-C₆)alkylene,

⇒ T'₂ represents a linear or branched (C₁-C₆)alkylene optionally substituted with one or more hydroxy groups,

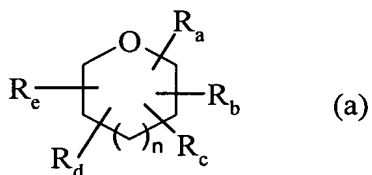
⇒ t represents integer of from 0 to 2 inclusive,
or Z represents methylenedioxy or ethylenedioxy,

- Q₁ represents a group selected from oxygen, NR₂, wherein R₂ represents a group selected from hydrogen, linear or branched (C₁-C₆)alkyl, aryl, aryl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched, cycloalkyl, cycloalkyl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched, -OR₃, -NR₃R₄, -O-T₂-NR₃R₄, -NR₃-T₂-NR₃R₄, linear or branched (C₁-C₆)hydroxyalkylamino, di((C₁-C₆)hydroxyalkyl)amino, in which the alkyl moieties may be linear or branched, -C(O)-R₃ and -NH-C(O)-R₃; or R₂ represents linear or branched (C₁-C₆)alkylene substituted by one or more identical or different groups selected from halogen, cyano, nitro, -OR₃, -NR₃R₄, -CO₂R₃, -C(O)R₃, linear or branched (C₁-C₆)hydroxyalkylamino, di((C₁-C₆)hydroxyalkyl)amino, in which the alkyl moieties may be

linear or branched, and $-C(O)-NHR_3$, R_3 , R_4 and T_2 being as defined hereinbefore,

- Q_2 represents a group selected from oxygen, NR'_2 , wherein R'_2 represents a group selected from hydrogen, linear or branched (C_1-C_6) alkyl, aryl, aryl- (C_1-C_6) alkyl, in which the alkyl moiety may be linear or branched, cycloalkyl, cycloalkyl- (C_1-C_6) alkyl, in which the alkyl moiety may be linear or branched, $-OR_3$, $-NR_3R_4$, $-O-T_2-NR_3R_4$, $-NR_3-T_2-NR_3R_4$, linear or branched (C_1-C_6) hydroxyalkylamino, di- $((C_1-C_6)$ hydroxyalkyl)amino, in which the alkyl moieties may be linear or branched, $-C(O)-R_3$ and $-NH-C(O)-R_3$; or R'_2 represents a linear or branched (C_1-C_6) alkylene substituted by one or more identical or different groups selected from halogen, cyano, nitro, $-OR_3$, $-NR_3R_4$, $-CO_2R_3$, $-C(O)R_3$, linear or branched (C_1-C_6) hydroxyalkylamino, di- $((C_1-C_6)$ hydroxyalkyl)amino, in which the alkyl moieties may be linear or branched, and $-C(O)-NHR_3$, R_3 , R_4 and T_2 being as defined hereinbefore,
- X_1 represents a group selected from hydrogen, hydroxy, linear or branched (C_1-C_6) alkoxy, mercapto, and linear or branched (C_1-C_6) alkylthio,
- Y_1 represents hydrogen, or
- X_1 and Y_1 , with carbon carrying them, together form carbonyl or thiocarbonyl,
- X_2 represents a group selected from hydrogen, hydroxy, linear or branched (C_1-C_6) alkoxy, mercapto and linear or branched (C_1-C_6) alkylthio,
- Y_2 represents hydrogen, or
- X_2 and Y_2 , with carbon carrying them, together form carbonyl or thiocarbonyl,
- X'_1 represents a group selected from hydrogen, hydroxy, linear or branched (C_1-C_6) alkoxy, mercapto and linear or branched (C_1-C_6) alkylthio,
- Y'_1 represents hydrogen, or
- X'_1 and Y'_1 , with carbon carrying them, together form carbonyl or thiocarbonyl,
- X'_2 represents a group selected from hydrogen, hydroxy, linear or branched (C_1-C_6) alkoxy, mercapto and linear or branched (C_1-C_6) alkylthio,
- Y'_2 represents hydrogen, or

- X'_2 and Y'_2 , with carbon carrying them, together form carbonyl or thiocarbonyl,
- R_1 represents a group selected from hydrogen, linear or branched (C₁-C₆)alkyl which may be optionally substituted by one or more groups selected from hydroxy, linear or branched (C₁-C₆)alkoxy, linear or branched (C₁-C₆)hydroxyalkoxy or NR₃R₄, the groups R₃ and R₄ being as defined hereinbefore ; or R_1 represents a group of formula (a) :



wherein :

- ✓ R_a , R_b , R_c and R_d , which may be identical or different, each represents, independently of the others, a bond or a group selected from hydrogen, halogen, hydroxy, linear or branched (C₁-C₆)alkoxy, aryloxy, aryl-(C₁-C₆)alkoxy in which the alkoxy moiety may be linear or branched, linear or branched (C₁-C₆)alkyl, aryl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched, aryl, -NR₃R₄ wherein R₃ and R₄ are as defined hereinbefore, azido, -N=NR₃ (wherein R₃ is as defined hereinbefore), -O-C(O)-R₅ wherein R₅ represents linear or branched (C₁-C₆)alkyl (optionally substituted by one or more groups selected from halogen, hydroxy, amino, linear or branched (C₁-C₆)alkylamino, and di(C₁-C₆)alkylamino in which the alkyl moieties may be linear or branched); or R₅ represents aryl, aryl-(C₁-C₆)alkyl in which the alkyl moiety may be linear or branched, cycloalkyl or heterocycloalkyl,
- ✓ R_e represents methylene (H₂C=) or a group of formula -U₁-R_a wherein U₁ represents single bond, methylene and R_a is as defined hereinbefore,
- ✓ n is 0 or 1,

it being understood that the group of formula (a) is bonded to the nitrogen atom by R_a , R_b , R_c , R_d or R_e ,

its enantiomers, diastereoisomers, and addition salts thereof with a pharmaceutically acceptable acid or base,

with the proviso that the compound may not be :

- 3b,6a,6b,7-tetrahydro-1*H*-dipyrrolo[3,4-a:3,4-c]carbazole-1,3,4,6-(2*H*,3*aH*,5*H*)-tetrone ;
- 5-ethyl-3b,6a,6b,7-tetrahydro-1*H*-dipyrrolo[3,4-a:3,4-c]carbazole-1,3,4,6-(2*H*,3*aH*,5*H*)-tetrone ;
- 3b,6a,7,11c-tetrahydro-1*H*-dipyrrolo[3,4-a:3,4-c]carbazole-1,3,4,6-(2*H*,3*aH*,5*H*)-tetrone ;
- 3b,6a,6b,7-tetrahydrofuro[3,4-a]pyrrolo[3,4-c]carbazole-1,3,4,6-(2*H*,3*aH*,5*H*)-tetrone ;

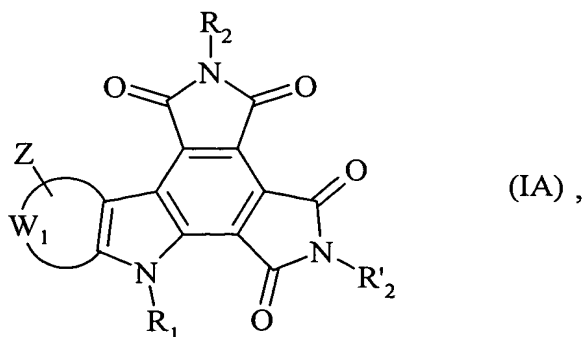
wherein aryl is understood to mean a phenyl, naphthyl, dihydronaphthyl, tetrahydronaphthyl, indenyl or indanyl group, each of those groups optionally being substituted by one or more identical or different groups selected from halogen, linear or branched (C₁-C₆)alkyl, linear or branched (C₁-C₆)trihaloalkyl, hydroxy, linear or branched (C₁-C₆)alkoxy, and NR₃R₄, R₃ and R₄ being as defined hereinbefore.

22- (previously presented) A compound of claim 21, wherein X₁ and Y₁, with the carbon carrying them, together form carbonyl, X₂ and Y₂, with the carbon carrying them, together form carbonyl, X'₁ and Y'₁, with the carbon carrying them, together form carbonyl and X'₂ and Y'₂, with the carbon carrying them, together form carbonyl.

23- (previously presented) A compound of claim 21 wherein Q₁ represents -NR₂.

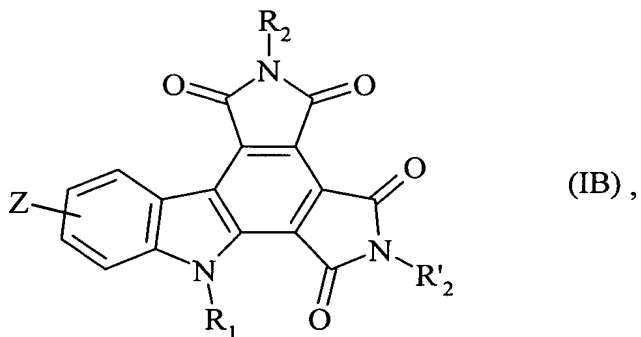
24- (previously presented) A compound of claim 21 wherein Q₂ represents -NR'₂.

25- (previously presented) A compound of claim 21 which is a compound of formula (IA) :



wherein R₁, R₂, R'₂, W₁, and Z are as defined in claim 21.

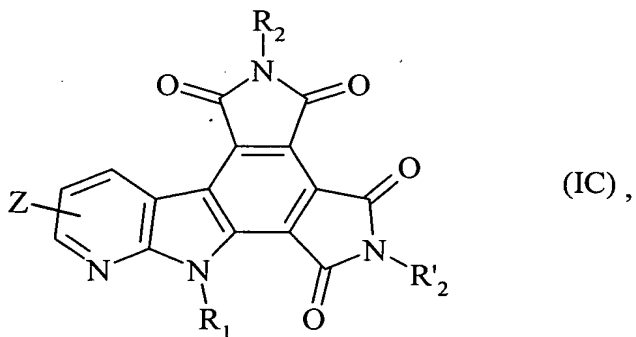
26- (previously presented) A compound of claim 21 which is a compound of formula (IB):



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wherein R_1 , R_2 , R'_2 , and Z are as defined in claim 21.

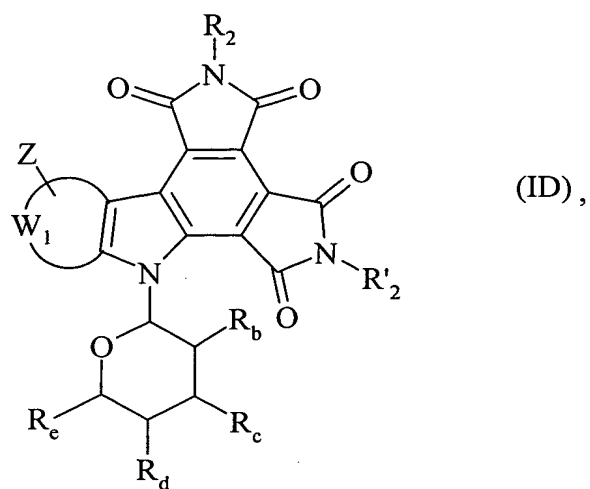
27- (previously presented) A compound of claim 21 which is a compound of formula (IC):



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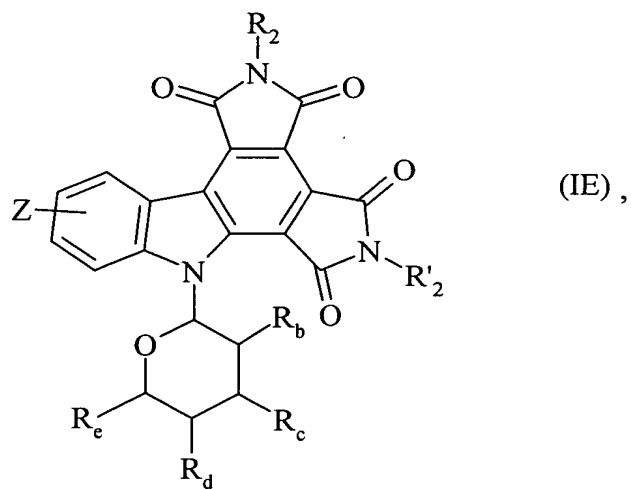
wherein R_1 , R_2 , R'_2 , and Z are as defined in claim 21.

28- (previously presented) A compound of claim 21 which is a compound of formula (ID):



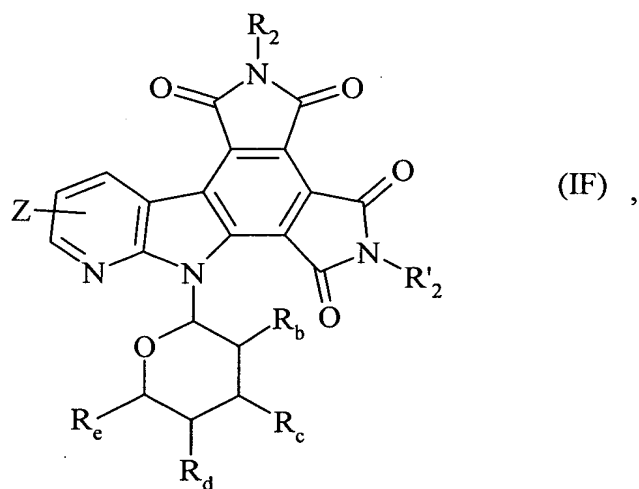
wherein R_2 , R'_2 , W_1 , Z , R_b , R_c , R_d , and R_e are as defined in claim 21.

29- (previously presented) A compound of claim 21 which is a compound of formula (IE):



wherein R_2 , R'_2 , Z , R_b , R_c , R_d , and R_e are as defined in claim 21.

30- (previously presented) A compound of claim 21 which is a compound of formula (IF):

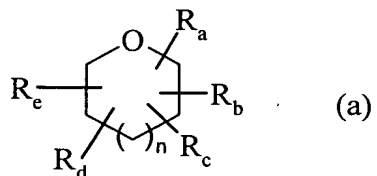


wherein R_2 , R'_2 , Z , R_b , R_c , R_d , and R_e are as defined in claim 21.

31- (previously presented) A compound of claim 21 wherein Z represents a group of formula U-V wherein U represents single bond and V represents a group selected from hydrogen, halogen, nitro, linear or branched (C_1-C_6) alkyl, hydroxy, linear or branched (C_1-C_6) alkoxy, aryl- (C_1-C_6) alkoxy in which the alkoxy moiety may be linear or branched, NR_3R_4 , wherein R_3 and R_4 each represents a hydrogen atom.

32- (previously presented) A compound of claim 21 wherein Z represents a group of formula U-V wherein U represents single bond and V represents a group selected from hydrogen, halogen, hydroxy, aryl- (C_1-C_6) alkoxy in which the alkoxy moiety may be linear or branched.

33- (previously presented) A compound of claim 21 wherein R_1 represents hydrogen, linear or branched (C_1-C_6) alkyl or a group of formula (a) :



bonded to the nitrogen atom by R_a ,
wherein :

- R_b , R_c , and R_d represent hydroxy, aryl-(C_1 - C_6)alkoxy in which the alkoxy moiety may be linear or branched, $-O-C(O)-R_5$ wherein R_5 represents linear or branched (C_1 - C_6)alkyl,
- R_e represents a group of formula U_1-R_a wherein U_1 represents methylene and R_a has the same definitions as R_b , R_c and R_d and n is 0,

34- (previously presented) A compound of claim 21 wherein R_1 represents hydrogen.

35- (previously presented) A compound of claim 21 wherein R_2 represents hydrogen, linear or branched (C_1 - C_6)alkyl, OR_3 , NR_3R_4 , or linear or branched (C_1 - C_6)alkylene substituted by OR_3 , NR_3R_4 wherein R_3 and R_4 are as defined for formula (I).

36- (previously presented) A compound of claim 21 wherein R_2 represents hydrogen, linear or branched (C_1 - C_6)alkyl, linear or branched (C_1 - C_6)alkylene substituted by NR_3R_4 wherein R_3 and R_4 are as defined for formula I.

37- (previously presented) A compound of claim 21 wherein R'_2 represents hydrogen, linear or branched (C_1 - C_6)alkyl, linear or branched (C_1 - C_6)alkylene substituted by NR_3R_4 wherein R_3 and R_4 are as defined for formula (I).

38- (previously presented) A compound of claim 21 which is selected from :

- 1*H*-dipyrrolo[3,4-*a*:3,4-*c*]carbazole-1,3,4,6(2*H*,5*H*,7*H*)-tetrone,
- 2-methyl-1*H*-dipyrrolo[3,4-*a*:3,4-*c*]carbazole-1,3,4,6(2*H*,5*H*,7*H*)-tetrone,
- 2,5-dimethyl-1*H*-dipyrrolo[3,4-*a*:3,4-*c*]carbazole-1,3,4,6(2*H*,5*H*,7*H*)-tetrone,
- 2-[2-(diethylamino)ethyl]-5-methyl-1*H*-dipyrrolo[3,4-*a*:3,4-*c*]carbazole-1,3,4,6(2*H*,5*H*,7*H*)-tetrone, and
- 10-hydroxy-1*H*-dipyrrolo[3,4-*a*:3,4-*c*]carbazole-1,3,4,6(2*H*,5*H*,7*H*)-tetrone.

39- (currently amended) A method for treating a living animal body afflicted with ~~eaneer~~ a condition selected from leukaemia, lung carcinoma, and prostate carcinoma, comprising the step of administering to the living animal body an amount of a compound of claim 21, which is effective for alleviation of ~~eaneer~~ the condition.

40- (previously presented) A pharmaceutical composition comprising as active principle an effective amount of a compound of claim 21, together with one or more pharmaceutically acceptable excipients or vehicles.